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Worldwide Report

ENVIRONMENTAL QUALITY

No. 290

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CONTENTS

WORLDWIDE AFFAIRS

ASIA

BRIEFS

INTERNATIONAL OIL DAMAGE FUND JOINED--Helsinki, 9 Jan--Finland yesterday joined the International Oil Damage Fund. That means that soon we will be getting compensation if an oil accident happens to our coast. When the Soviet tanker Antonio Gramsci went aground two years ago off Lettland Sweden received prompt compensation for its expenses in connection with combating the oil, a total of 70 million kronor. Finland received nothing because the country was not a member of the fund at that time. But combating the oil cost us 15 million marks, of which we received 3 million from the Soviets. Some of the nations which belong to the fund are Sweden, Norway, Denmark, Algeria, Tunisia, Japan, West Germany, Yugoslavia, and France. For a single accident the fund will pay a maximum of 200 million marks. When an accident occurs in a member country the others contribute to the fund. The maximum amount for Finland will be three million marks. The fund was founded in 1971. Finland has considered membership since 1973. If we had been a member when the Antonio Gramsci accident happened the entire sum of 15 million would have been paid. Member countries pay for the activities of the fund in relation to the amount of oil being transported. Finland's share is one and one-half percent. [Text] [Helsinki HUFVUDSTADSBLADET in Swedish 9 Jan 81 p 10] 9287

CSO: 5000

SCIENTISTS URGE CONSERVATION, ANTIPOLLUTION EFFORT

New Delhi PATRIOT in English 8 Jan 81 p 7

[Text] Varanasi, Jan 7 (UNI). The 68th session of the Indian Science Congress today ended strongly recommending immediate implementation of the acts against air and water pollution and a legislation to check noise pollution.

In all the congress has made 30 recommendations for the protection and conservation of natural ecosystems. The session inaugurated by Prime Minister Indira Gandhi on 3 January was attended by more than 3,500 delegates from all over the country and about 50 from other nations.

The focal theme of the four-day congress was 'Impact of Science and Technology on the Environment.'

Advocating the inclusion of environmental protection in the Concurrent List, the congress has called for powers to the department of environment for initiating legislative measures by Parliament.

Strict adherence to Factories Act Drug Control Act, Food Adulteration Act and Insecticides Act was necessary, the congress has said.

It has called for setting specific standards for use of agricultural chemicals and similar standards for the use of chemicals in the pharmaceutical cosmetic, plastic, mining and other industries.

As an effective measure to check pollution the congress has recommended 'anti-pollution tax' to be paid by the industries for discharge of their effluents. This should be enforced even after the industries have installed effluent recycling plants.

The congress has recommended demarcation of gene pool reserves and gene sanctuaries. It has also suggested setting up of a large number of biospheres containing endangered, rare or commercially important species at the earliest on the basis of the directory of flora and fauna.

The congress has suggested establishment of aerobiological centres at various places in the country for monitoring and research on airborue spores.

The coastal factories the congress has suggested laying of submarine pipelines for discharge of effluents at a depth of 17 to 20 metres.

Other recommendations of the congress include: creation of a special cell in the Department of Environment for conservation and monitoring of marine resources and providing protection against pollution hazards, setting up of genetic counselling units at various places to monitor genetic disorders and congenital anomalies, involvement of ecologists at all levels of planning and scientific, administrative and social measures to check the population explosion.

CSO: 5000

EXPERT DEPLORES LOSSES FROM WIND, WATER EROSION

Calcutta THE STATESMAN in English 23 Dec 80 p 9

[Text]

NEW DEUHI, Dec. 22.—The country is losing several crores a year in terms of agricultural, animal and forest production as a result of wind and water erosion reports UNI.

"These losses show up unmistakably the pitiable condition of our poverty-stricken masses" the Petroleum Secretary, Mr B. B. Vohra, who is a conservation expert, said here today while delivering the Patel Memorial Lecture.

One of the indirect losses of water erosion was reduction of the life expectancy of the major and medium irrigation and multipurpose projects.

What was "particularly alarming", Mr Vohra said, was that in most cases there would be no alternative sites for dams once the existing ones became useless because of the high rate of sedimentation. "What is at stake is, therefore, the loss of the irreplaceable potential—for irrigation, electricity and flood control that these storages represent". Because threat to the hydel potential was a particularly serious matter in the context of deepening energy crisis.

Besides, Mr Vohra said, soil erosion caused serious problems of annual floods and drying of water resources.

Underlyning the need for a programme of erosion control, he suggested a minimum outlay of Rs 15,000 crores for the purpose. This was on a conservative estimate that on an average, Rs 1,000 would be needed for treating one hectare.

"Such an investment though colossal in size would certainly be justified if it can be carried out in a manner which is technically sound, and is supported by the local communities concerned, as well as by a stern political and administrative will."

Mr Vohra said this was the approach followed by China and South Korea which were "eminently successful" in tackling their problems of deforestation, denudation and soil erosion on a wide scale. In both these countries, very stern measures were taken, he said, to ensure effective protection for degraded lands. China had placed 55 million hectares under new forests during the past thirty years while in South Korea there was hardly any denuded land to be seen anywhere.

Besides the problem of erosion, Mr Vohra said there were other threats which the soil faced. One of them was the diversion of good agricultural land to urban uses. Since such diversions were irreversible, it was necessary to ensure that wherever possible such Urban growth took place only on comparatively inferior soils.

CSO: 5000

BRIEFS

MAHARASHTRA FOREST AREA--Bombay, December 3: The area under forests in Maharashtra has been reduced by nearly six per cent in the last 20 years, according to Mr Nanabhau Embadwar, minister for forests. The minister said this was because of the rise in population, industrialisation, irrigation and encroachments. He was replying to questions at a press conference at Mantralaya today. At present, forests cover 21 per cent of the state's area, he said. Mr Embadwar said a wildlife week would be observed in the state from Friday. Encroachments on forests and illegal killing, he said had resulted in some wildlife species becoming rare or nearly extinct. The government had taken up schemes to preserve rare species of wildlife. A sanctuary for the black buck had been formed in Ahmednagar and for the great Indian bustard in Ahmednagar and Solapur districts. [Text] [Bombay THE TIMES OF INDIA in English 4 Dec 80 p 5]

CSO: 5000

DETERIORATION OF TROPICAL AND SUBTROPICAL ECOLOGY DISCUSSED

Beijing GUANGMING RIBAO in Chinese 19 Nov 80 p 1

[Article by Zhang Yichang [1728 5065 2490]: "Use of Tropical and Semitropical Mountain Areas and Hills To Develop Diversification; Scientists and Technicians Propose Changes in the Deterioration of the Ecological Balance in These Kinds of Areas"]

[Text] Delegates attending the academic discussion conference on tropical and semitropical mountain areas and hill construction and the ecological balance, recently convened at Zhuzhou Municipality in Hunan, pointed out that one should never consider China's tropical and semitropical mountain regions and hills a "burden". Instead, one should consider them a treasure for China's overall development of agriculture, forestry, livestock raising, sideline occupations, and fisheries, as well as for diversified crops.

Formerly, numerous places did not appreciate the advantages of such treasure lands. They would grow grain on the 20 percent that was fields, overlooking possibilities for diversification on the 70 percent that was mountainous. Controlled by the mentality of a single grain crop economy, they ran wild destroying forests, destroying vegetation, and filling in lakes to make fields, to the point that large areas of mountain land not only could not be put to any rational use, but even suffered serious damage and had their ecological balance altered with extremely serious consequences. In order to change this increasing deterioration of the ecological balance in such areas, the delegates made the following proposals:

Appropriate authorities in the State Council should take urgent action to stop the destruction of forests and the clearing of land, the destruction of vegetation to grow grain, and all senseless cutting. In particular, they should put a stop to the use of authority transferred downward to fell forests wantonly.

Set up water and soil conservation organizations with State Council leaders, intensifying water and soil conservation work in the Changjiang [Yangtze] basin, particularly in its upper reaches, in order to improve the ecology. Propose the construction of a water resources conservation forest project in the upper reaches of the Changjiang in order to make the upper reaches of the Changjiang green.

Propose that the state make a priority construction investment in tropical and semitropical mountainous and hilly areas in order to fully exploit their advantages.

Establish a state natural resources administration for unified administration of natural resources throughout the country, and formulate as soon as possible a plan for the zoning of resources in the tropics and semitropics, for the protection of resources, and for their development and use.

When formulating programs and plans for the economic construction of mountainous and hilly regions, pertinent planning departments must simultaneously consider the three elements of resources and environmental quality, economic benefits, and technical assurances. They should set up an advisory committee made up of natural scientists and social scientists.

The 70-percent mountainous regions should be the strategic focus for the building of tropical and semitropical areas. Mountainous and hilly regions should for the most part develop headwater forests, firewood forests, economic forests, and timber forests, plus provide in a rational way for agriculture, forestry, livestock raising, sideline occupations and fishery production. Per unit yields of grain crops must be increased, and attention must be given to woody grain oil crops.

Vigorously protect wildlife resources through better care and propagation work. The state should make a suitable investment for strengthening natural protection administrative organizations, while at the same time formulating administrative regulations for wildlife resources. They must put a stop to the reckless destruction of valuable wildlife resources in pursuit of foreign exchange earnings.

Intensify propaganda, education, and research ecology in a general spread of knowledge about ecology. Courses of this nature should be set up from middle school into university, and institutions of higher education with the proper facilities should set up a specialty in ecology. The State Scientific and Technological Commission should place ecological research on its list of important research projects, set up a corresponding ecological research unit, and gradually set up at fixed locations in key areas throughout the entire country research stations on the ecological system. They should also organize relevant natural scientists and social scientists to conduct a comprehensive review of China's tropical and subtropical mountain and hill regions.

This conference was sponsored by the China Science and Technology Association and was arranged by 11 national societies and the Provincial Science and Technology Associations in Hunan, Guangdong, Yunnan, Guizhou, and Sichuan provinces.

9432
CSO: 5000

FIRST USE OF OXYGENATION PONDS FOR LIQUID WASTE TREATMENT

Beijing GUANGMING RIBAO in Chinese 11 Dec 80 p 2

[Article by Ma Zhenbo [7456 2182 3134] and Yang Yuxin [2799 5148 2450]: "First Use of Oxygenation Ponds To Purify Liquid Waste Successful in Treating Yaer Lake"]

[Text] The Aquatic Biology Institute of the Chinese Academy of Sciences has worked together with Echeng County in Hubei Province to use oxygenation ponds for the purification of liquid wastes in China for the first time to achieve outstanding success in the treatment of Yaer Lake, which is seriously polluted with farm chemical wastes. This has opened a new avenue for China's treatment of bodies of water polluted by farm chemicals.

Yaer Lake is a source of water for drinking and irrigation for 300,000 people and 400,000 mu of farmland along its shores, and it is also a major base for fishing industry production in Hubei. Ever since 1961, as a result of the continuous construction of chemical plants nearby, large amounts of untreated organic phosphate liquid farm chemical wastewater, which is highly toxic, have been flushed directly into Yanjia Lake, a companion lake of Yaer Lake, seriously polluting the water of Yaer Lake to the point that it was no longer potable for man or animals; crops could not be irrigated with this water; aquatic plants would not grow in its; and fish and shrimp could not survive in it.

Scientists from the Aquatic Biology Institute of the Chinese Academy of Sciences began an overall, multidisciplined survey of pollution in Yaer Lake in 1972, proposing a program for the treatment of liquid wastes centering on construction of an oxygenation pond. With the vigorous support of the Provincial Environmental Protection Bureau, the Provincial Science Commission, and the Echeng County CCP Committee, a dam was built in Yanjian Lake to make a separation pond, and a dike was erected to slow the flow as a means of intensifying purification capability. Then five multilevel, connected oxygenation pond systems covering an area totaling 6,000 mu were built for the treatment of the liquid waste. The liquid waste, which stretched out over a length of 7 kilometers, was brought under control in the oxygenation ponds, where solar energy and algae and bacteria in the water worked together to break down the liquid waste's organic elements. The phosphates and nitrates were recovered, thereby completely purfying the liquid waste to achieve the overall goal of turning evil into good. With the revival of the ecological system of the Yaer Lake system, the physical health of the masses around the lake has been assured.

Most recently, the Chinese Academy of Sciences commissioned its Wuhan branch to convene an appraisal conference in conjunction with the Hubei Provincial Science Commission and the Environmental Protection Bureau. The conference unanimously passed the "Scientific and Technical Accomplishments Appraisal."

9432
CSO: 5000

BRIEFS

ACID RAIN--Late last month, the Municipal Environmental Protection Institute witnessed an acid rain in Xingzhuang, Longhua, and Songjiang in Shanghai County. This was a signal of atmospheric pollution that should occasion alarm. Rain usually tends to be acidic. As everyone knows, Ph values, which denote the degree of acidity or alkalinity, range from 1 to 14, with 7 being neutral. A value greater than 7 is alkaline, and a value of less than 7 is acidic. Normally, the Ph value for rain is around 6 or 7. If it is less than 5.6, it is termed acid rain. Acid rain is caused primarily by atmospheric pollutants. Coal, petroleum, and iron ore have a high sulfur content. They are the principal raw materials and fuels used in thermal power, steel, nonferrous metal smelting, sulfuric acid, and cement plants. The gases that such industrial plants emit contain large amounts of sulfur dioxide. When this mixes with water vapor in the atmosphere, it forms acid clouds, which may form acid rain that falls on the ground below. Acid rain can pollute rivers and lakes, impair the quality of drinking water, and directly harm human health. It may also turn soil bad, impairing the growth of agricultural crops and eroding buildings. It has been estimated that throughout the world 150 billion tons of sulfur dioxide are emitted into the atmosphere every year. To reduce the damage done by acid rain, improvements in the fuels used, in the burning methods, and in the techniques for removing sulfur are necessary, and strict limitations must be placed on the release of sulfides. [Text] [Shanghai WEN HUI BAO in Chinese 28 Oct 80 p 4] 9432

POLLUTION CONTROL--Beijing, 4 Jan (Xinhua)--In accordance with provisions of the state environmental law, fines were imposed on more than 1,500 industrial enterprises in 20 provinces, municipalities and autonomous regions for effluent discharged in excess of the permitted levels. The 20 provinces, municipalities and autonomous regions are: Jiangsu, Yunnan, Hebei, Zhejiang, Hunan, Hubei, Anhui, Shaanxi, Gansu, Henan, Shanxi, Shandong, Guizhou, Jiangxi, Fujian, Guangdong, Liaoning, Sichuan, Shanghai and Xinjiang. The fines imposed were usually slightly higher than the cost of proper disposal of waste. [Beijing Xinhua Domestic Service in Chinese 0133 GMT 4 Jan 81]

ENVIRONMENTAL PROTECTION EDUCATION--Tianjin, 18 Jan (Xinhua)--The State Environmental Protection Office recently held a forum on environmental protection education in Tianjin. The forum noted that 16 universities and colleges in China offer environmental protection specialties. At the end of last year, China also had over 200 environmental protection training and study classes attended by nearly 10,000 students. [Beijing Xinhua Domestic Service in Chinese 0308 GMT 18 Jan 81]

XINJIANG ENVIRONMENTAL POLLUTION--A mobilization meeting on pollution control was held in Urumqi, Xinjiang, on 15 January, attended by 500 people, including responsible persons of leading organs at regional and municipal levels and plants, mines and enterprises as well as environmental protection cadres. Tuo-Hu-Ti Sha-Bi-Er, vice chairman of the Xinjiang Regional People's Government, addressed the meeting, noting the seriousness of air and water pollution in Urumqi and calling for effective measures and the strengthening of the legal system in order to bring the problem under control. [OW210455 Urumqi Xiniang Regional Service in Mandarin 1300 GMT 18 Jan 81]

CSO: 5000

BRIEFS

SEWAGE DUMPING CAUSING POLLUTION--"The greater part of water pollution in Colombo is caused by people, and not factories." This was the opinion of Professor Guy Casteignau, French expert on the treatment and purification of urban and industrial water. Professor Casteignau, while briefing the press about the sophisticated equipment for water purification presented by the French Embassy to the CISIR said that the sea cannot be a dumping ground for all the sewage from a city like Colombo. "Colombo will soon need some means of treating sewage-water. New technology has been developed for this process of cleaning sewage water, so that it could be reused for example, for cattle. This has been done in Algeria, where the total water requirement for cattle is 20 thousand gallons per day." [Text] [Colombo SUN in English 24 Jan 81 p 3]

CONTAMINATED WATER PIPES--Tap water in Colombo is not pure. This is the opinion of Professor Guy Casteignau, Director of the Water Institute of France, who was in Sri Lanka with two of his associates Prof. Daniel Villessot, Deputy Manager and J. C. Sauvaget, Engineer of the Institute. Professor Casteignau does not blame the National Water Supply and Drainage Board for this. "The water treatment plant at Ambatale is new and sophisticated. The Board sends in pure water but it gets contaminated on the way because of the faults and defects in the distribution network," he said. "Providing pure water has become problem number one all the world over. About 30 per cent of the diseases are caused by impure water. This problem has to be solved even before we find solution to the problem of petroleum products," he said. Water problem has to be dealt in two areas, drinking water and industrial water. From drinking water dissolved pollutants have to be separated. The disease causing organisms have to be destroyed. From water utilised by industries dissolved foreign matter has to be removed and corrosion causing acidic properties have to be neutralized. The three French experts who came under the Scientific and Technical Co-operation program between Sri Lanka and France held three seminars, one for the engineers of the Ceylon Institute for Scientific and Industrial Research and two for top and middle level engineers and technical staff of the National and Water Supply Drainage Board to train them on the treatment of drinking water. For that purpose the French Water Institute had gifted two modern apparatus, the Floatation Pilot Unit and the Ultrafiltration Pilot Unit to the CISIR on Thursday. The presentation was made by Mr Bernard Ledun, charge d'affaires of France in Sri Lanka and accepted by Prof. P. C. B. Fernando, Chairman, CISIR. France, too, will train a Sri Lankan engineer in the modern technology of water treatment. [Text] [Colombo CEYLON DAILY NEWS in English 24 Jan 81 p 1]

CSO: 5000

FUTURE WATER SHORTAGE SEEN IN CHAO PHRAYA BASIN

Bangkok DAO SIAM in Thai 24 Dec 80 pp 3, 14

[Article: "In Another 5 Years, the Chao Phraya Basin Will Not Have Enough Water For Various Activities"]

[Text] Water From the Mekong River Must be Shifted to Help

Mr Phattana Ketsamli, the deputy director of the Electricity Generating Aughority of Thailand, revealed that between 1985 and 1990, water requirements in the Chao Phraya Basin will almost double as compared with today's needs. Thus, it is essential that sources of water be found to supplement [present sources].

The deputy director of the Electricity Generating Authority of Thailand stated that the Chao Phraya river basin is the largest river basin in the country. At present, the average annual volume of water is approximately 30 billion cubic meters of water. However, the various dams, such as the Phumiphol, Kieulom and Chao Phraya dams, can hold only 12.6 billion cubic meters of water a year, which is approximatly 42 percent of the total amount of water in the Chao Phraya basin. When this is added to the amount of water that flows in the natural streams, the amount of water that can be used for agricultural consumption, river communications and protection against saline water does not exceed 17 billion cubic meters a year. This is not enough to satisfy the water requirements, which are increasing each year. And it is expected that water requirements in the Chao Phraya basin in the years 1985 to 1990 will double as compared with the present. That is, in 1985, approximately 29 billion cubic meters of water will be needed and in 1990 about 35.5 billion cubic meters will be needed. This means that there will be a water shortage and, therefore, it is necessary that additional sources of water be found.

The deputy director of the Electricity Generating Authority of Thailand also said that, concerning the search for additional water to satisfy future needs, from the surveys conducted, it has been learned that the Ing River basin, which is located in the northern-most region of the country, has a branch that connects to the Chao Phraya River and that it also flows into the Mekong

River at Som Ing Nue Village in Chiang Khong District, Chiang Rai Province. The amount of water from this river that is not put to good use averages approximately 27 billion cubic meters. Thus, there is a project aimed at putting this water to use by having five pumping stations pump the water into canals that will be built and into tunnels that will be dug so that the water can flow into the Yom River in Pong District in Phaya Province. A power plant will be built here to produce electricity to compensate for the electricity used by the water pumping stations. Besides this, a related project is that, after the water has been released into the Yom River, it will be stored at the Sua Ten Lake. Approximately 3.1 billion cubic meters of water will be stored here. A power generator will be installed at the Sua Ten Lake and then the water will be released. In the end, the water will flow to the dams in Song District in order to channel the water into the reservoir of the Sirikit Dam. This will be accomplished by means of the canals and tunnels. The project to channel water from the Ing and Yom rivers will help relieve the water shortage in the Chao Phraya River basin by providing approximately 11 billion cubic meters of water a year.

11943
CSO: 5000

INCREASED PROBLEMS OF AIR POLLUTION EXPECTED

Tirana ZERI I POPULLIT in Albanian 10 Dec 80 p 3

[Article by Vasil Thanasi: "Let Us Keep Our Environment Clean and Healthy"]

[Excerpts] In Albania the problem of the protection of the environment, in gelera, and of the atmosphere, in particular, is being tackled in a broad political-organizational plan and duties, responsibilities and functions have been assigned to the appropriate organs. Scientific studies, with practical value, on problems of pollution in general, undertaken by the Institute of Hygiene and Epidemiology, in close cooperation with the directorates of hygiene and epidemiology in the districts and other institutions not concerned with health matters are of special importance.

Current data on Albania show that the content of untreated pollutants in the air is generally 2 to 3 times less than the allowable norms, the sulfur dioxide content is 5 to 8 times less and, the sulfridic nitrogen dioxide gas content is 8 to 15 times less than the norm. In addition to these good indicators, the studies also reveal some things which are undesirable from the viewpoint of health and the economy. In some cities, such as Tirana, Durres, Elbasan and Fier, the soot content is relatively high. In these cases, we are dealing with pollution resulting from the improper combustion of fuels. From the economic viewpoint, unconsumed fuel is a loss. From the viewpoint of health, it contains materials which are very dangerous. This problem should be taken seriously by the consumers of fuels, such as industry and transportation.

In addition to soot, the problem of pollution from gases emitted during various technological process and during the combustion process should not be underestimated. Technological processes are not always carried out and purification units are not always set up and do not always operate in accordance with the requirements set forth in our legislation in force.

The studies carried out and discussed by the scientific council of the Institute of Hygiene and Epidemiology shed light on one of the methods adopted to eliminate or decrease air pollution. This is when pollutants are discharged by means of tall chimneys. During the construction of these chimneys, it is important to consider the polluting characteristics of the discharge process. There have been cases where the chimneys of industrial plants have been lower than they should be.

The problem is more acute now when many plants are substituting coal for oil and there is greater pollution of the air, especially with ash and soot. In these cases, a strict health control is essential, beginning with the design phase, so as not to allow any increase in atmospheric pollution.

There should be better cooperation, on more scientific bases, of designers, technicians, workers in the state health inspectorate and technical security workers, beginning with the design of the plant, in determining its location and during the period in which it is put into operation. Complex studies must be made for this purpose. Specialists from various fields should be involved in these studies: physicists and mathematicians, meteorologists and chemists, hygiene workers and biologists, economists and jurists. At present, this is lacking. More attention should be concentrated on learning, in advance, about pollutants emitted by new plants, while keeping in mind the meteorological factors of the area. This effort, at the present time when industry is young and the workers are generally young, should be better organized.

CSO: 5000

STATE COUNCIL APPROVES GUIDELINES TO REDUCE POLLUTION BY MOTOR VEHICLES

Sofia RABOTNICHESKO DELO in Bulgarian 28 Dec 80 pp 1, 2

[Directions on the Protection of the Human Environment from Pollution Caused by Automotive Transportation, adopted by the State Council at its 11 December 1980 meeting]

[Text] Transportation plays an exceptionally important role in the building of a developed socialist society in the Bulgarian People's Republic. As Comrade Todor Zhivkov points out, it is a "huge focal point within which the results of the entire economy are collected and refracted."

Motor vehicles play a central part in the transportation system. Today some 400 million motor vehicles are in operation throughout the world. According to a United Nations forecast, should the rate of output remain the same, by the year 2000 there will be 700 million vehicles in operation.

In the Bulgarian People's Republic as well, automotive transportation is developing at a fast pace. There are over 1.6 million motor vehicles, including 730,000 private passenger cars. The automobile has become an important transport facility for short-distance haulage. Between 1960 and 1979 the work done through this system in terms of tons/kilometers rose by a factor of eight while the number of transported passengers rose by a factor of nine.

Our country is an intensive transport crossroads of intercontinental significance and a major international tourist site. Every year over one million foreign motor vehicles cross our country.

Along with the development and the ever more extensive utilization of motor vehicles, the positive effects are paralleled by some consequences which are adverse to the health and well-being of man and the quality of the environment. In the developed countries they are the source of over 50 percent of all harmful substances released into the atmosphere.

Automotive transportation is developing into one of the main sources of air pollution in our country as well. In Sofia and other densely populated areas with a heavy concentration of automotive vehicles, emissions of harmful substances account for 50 percent of the overall amount of atmospheric pollutants. Automotive transportation is the main source of intensive "noise aggression." All this defines the great social significance of the struggle against the harmful effects of automotive transportation.

Automotive transportation harms agriculture as well. It lowers the productivity of the livestock and the poultry in farms located along main highways.

The sensitive mountain ecological systems, areas for recreation and tourism, natural sites, and cultural monuments protected by the law are severely harmed by the influx of automotive vehicles.

A number of technical and organizational measures are being implemented to lower the harmful effect of automotive transportation. Work is being done to improve the composition of fuels, reduce carbon monoxide in the emitted gases of gasoline engines and the ash released by diesel engines, and for improving the organization and control of motor vehicle traffic. The building of a subway is planned for the capital.

Yet the State Council has noted that such measures are insufficient and are below the possibilities of our socialist society. The technical maintenance and exploitation of motor vehicles, the road network, the organization of traffic, scientific research, and the training and education of cadres in this area have fallen behind ecological requirements. In the large cities and industrial and recreation centers there are frequent traffic stops and vehicular congestions in the course of which the engines are kept idling with excessive use of fuel and a release of maximum quantities of noxious gases. Automobiles are parked on sidewalks and are restraining pedestrian traffic to an ever greater extent. Private vehicles are being washed on the streets with drinking water while fuel and lubricants are poured out indiscriminately, thus polluting the urban and natural environment.

Considering the exceptionally great social significance of the struggle against the harm caused by automotive transportation, the State Council of the Bulgarian People's Republic believes that the main purpose of the state policy in this area should be the following: through the systematic application of the economic approach, the development of automotive transportation should be organized fully in accordance with hygienic and technological requirements so that the harmful consequences to human health and the environment may be reduced to a minimum and eliminated.

The prevention and restriction of the harmful effect of automotive transportation, based on higher traffic safety and fuel conservation, must be considered one of the strategic directions in the protection and reproduction of the natural environment in the Bulgarian People's Republic.

The systematic implementation of the main objective requires the application of a qualitatively new approach to the comprehensive solution of problems on the basis of the accelerated application of the latest achievements of scientific and technical progress, coordinated with the principles, objectives, and tasks of the ecological policy of our socialist state.

The protection of the human environment from the harmful effects of automotive transportation will be in accordance with the following main directions:

1. High Economic, Social and Ecological Assessments

The application of the economic approach in the overall activities for the prevention of the harmful effects of automotive transportation offers extensive opportunities for achieving significant economic and socio-ecological results. This requires the following:

The elaboration of a system of specific indicators and criteria of the economic mechanism, norms, standards, incentives, and penalties. Overall activities in the struggle against the harmful effects must be made consistent with such a system;

The people's councils must be provided with the possibility of financing measures for limiting and preventing the harmful effects of automotive transportation through the budget, the funds of the economic organizations, and other sources stipulated in the economic mechanism for the financing of such measures;

The technical documentation of the new motor vehicles must reflect the necessary data on the emission of harmful substances and the noise level;

Priority must be given to public transport and to noiseless, low-polluting and non-polluting motors, particularly those based on the use of electric power. Modern and fast trolley buses must be used in the largest cities; in Sofia the streetcars must be updated and made noiseless in order to restrict to a minimum the harmful effects of automotive transportation in the working, residential, and recreational areas and save on fuels, funds, and time;

The use of trucks and passenger cars in the central city areas must be reduced to a minimum by gradually moving warehousing facilities from such areas and building department and other stores in the outer districts and suburban zones of big settlements;

The current system of hauling freight by public automotive facilities must be reviewed and reassessed in accordance with the party policy of the optimal development of the transportation system and, above all, of rail transport as its basic unit, with a view to its effectiveness and expediency and in accordance with the ecological environment of the individual parts of the country;

An integrated urban and settlement transportation system must be introduced and developed on the basis of a rational balance among public transport facilities and private cars, in order to meet to an optimal extent socio-ecological requirements in the development of economic relations and contacts with nature.

2. Improving the Organization of the Traffic and the Technical Maintenance and Operation of Motor Vehicles

The organization of the traffic of transport vehicles in settlements, their qualitative technical servicing and maintenance of motor vehicles, and the high-level technological discipline of their drivers are required in order to insure the rapid and maximal limiting of the harmful effects of automotive transportation and to insure fuel conservation. This requires the following:

a. Technical Maintenance and High Standards of Operation of Automotive Fleets by Means of:

Expanding the network of service centers and specialized technical workshops in areas for individual servicing, equipped with modern electronic diagnostic equipment and tools and necessary spare parts in order decisively to improve technical maintenance and servicing of state and private motor vehicles;

The gradual introduction of a subscription system for the differentiated technical services and for the maintenance of individual motor vehicles, stipulating the responsibility of the service centers and technical workshops and insuring the observance of ecological norms and requirements;

Improving the system of preventive control of motor vehicles and insuring their uninterrupted optimal operational regimen in accordance with ecological requirements;

b. Decisive Improvements Must Be Made in the Organization of Traffic in Settlements by Means of:

The formulation within territorial-structure and urban construction plans of optimal decisions for the ecologically expedient development of the road and street network, insuring the rational organization of transport connections among the different functional areas and the elimination of intensive automotive traffic in the center, the proper location of main urban arteries, bypasses, parking areas, service centers, technical servicing bases, motor vehicle stops, trade and tourist sites, and warehousing facilities;

Improving, with a view to ecological requirements, the organization of automotive traveling and insuring optimizing of transportation, limiting to a minimum empty runs, introducing unhindered traffic at crossroads and along main street arteries, channeling transport flows along relatively widely used roads, assigning separate streets for trucks and public transport, and others;

Improving the structure of the public transport system in Sofia, the big settlements, the resort centers, and the recreation areas, giving priority to ecologically expedient and economically profitable transport facilities and particularly to the electrification of the transportation system;

On the basis of comprehensive studies, modernizing the main network of arteries and streets in large settlements by expanding their handling capacity and converting to uninterrupted traffic through the building of road overpasses at different levels in the most congested sectors;

Speeding up the paving of streets in the big settlements, areas of intensive automotive traffic, and resort and recreation centers;

Improving conditions for the development of bicycle transportation and the building of special bicycle paths, particularly for commuting to jobs and the resort areas, organizing bicycle parking spaces, and so on;

Creating pedestrian zones and separate lanes for mass urban passenger transport.

3. Further Effective Utilization of the Achievements of Scientific and Technical Progress

The effective combination of science with production, the accelerated application of the achievements of scientific and technical progress and, particularly, of electronics will be of decisive significance in the elimination of the harmful effects of automotive transportation. The following will be required for achieving direct economic and socio-ecological results:

a. Systematic Use of Electronics in Motor Vehicles and the Application of Effective Equipment and Technological Means Such As:

The extensive use of the achievements of electronics in lowering the content of toxic substances in burned gases and insuring fuel conservation and the mass introduction of electronic systems to improve the injection and the firing of the fuel and the work of the carburetor and the other automotive systems, and the creation of conditions for the gradual development of an electronic system with a central microprocessor as a modern and effective means for optimizing the work of the engine, combining economic with ecological effectiveness. The production of the necessary elements, assemblies, and programs for the system will be based on the further and intensified cooperation with the USSR and the other CEMA-member countries which are manufacturers of automobiles;

The introduction of modern technical means and particularly of electronic instruments for the automated regulation, control and management of the automotive traffic in the capital and the big settlements;

Experimentation and application of catalytic neutralizers (waste burners) manufactured mainly from local raw materials. These will insure the high level of detoxification of toxic substances in burned-out gases. Priority will be given to their installation in gas-operated lift trucks and in public transportation in the big cities and resort centers;

Following the development of basically new engine designs with a view to their application on our country;

Expanding the use of domestic experience in the production of electric hoists leading to the development of noiseless electric cars which could be used in areas with adverse ecological circumstances and other specific working conditions.

b. Improving the Technical-Economic Indicators of Fuels and Lubricants and Utilization of New Ecologically Clean Fuels by Means of:

Improving the composition of used fuels and gradually replacing the harmful components in the antidetonation means with harmless chemical compounds needed for maintaining a high octane number. All necessary measures must be taken to commission on time the new (cracking) facilities of the Burgas Petrochemical Combine;

Improving the quality and insuring the optimal utilization of the propane-butane gas produced in the country for use by public transport in Sofia, Varna, Burgas and other big settlements and industrial and resort centers whose ecological situation has worsened;

Experimenting with new fuels which either will not pollute or will considerably lower the pollution of the human environment:

Hydrogen, alcohols, and mixtures with traditional and other fuels. Particular attention must be paid to the development of the hydrogen power industry, which provides a radical solution to ecological problems.

c. Upgrading the Effectiveness of Scientific Research by Means of:

Insuring the maximal utilization of the results of scientific research and experience acquired in its implementation by the advanced countries and particularly in the USSR and the CEMA-member countries, in the solution of problems related to lowering the harmful effects of automotive transportation and insuring fuel conservation;

Concentrating the efforts of scientific organizations on resolving the problems of the improvement of the combustion process, either independently or jointly with the scientific institutions of the USSR and the CEMA-member countries, the elaboration and application of electronic systems and catalytic neutralizers, detoxifying burned gases, and improving the ecological characteristics of the existing fuels and seeking new clean ones;

Directing scientific studies on the development of systems for the automatic registration and control of harmful elements as an element within the unified control system for improving the organization, the management, and the control of automotive traffic in big settlements, and the utilization of contemporary technical facilities and, particularly, electronic equipment.

4. Major Change in the Struggle Against Noise and Vibrations Caused by Automotive Transportation

This will require the following:

The use of new and highly effective noise-dampening materials for the transport vehicles produced in our country, diesel engines in particular;

The mandatory control of the noise level of automotive vehicles in the course of annual technical tests, in accordance with the stipulated standards;

The utilization of effective noise zoning in settlements in order to eliminate noise pollution caused by automotive transportation through the formulation of new systems for directing the automotive traffic and restricting the access of automotive vehicles to areas with an adverse acoustical environment, residential districts, and areas surrounding hospitals and schools;

Decisively to improve the creation of the noise abatement installations in areas and around main streets and arteries with intensive traffic, using natural and artificial barriers and plants possessing high sanitary-hygienic and aesthetic qualities;

The use of modern architectural solutions in the building and internal layout of housing and work installations in intensive traffic zones;

The intensification of current control on the maintenance and operation of automotive vehicles and insuring the strict observance of stipulated noise and vibration norms.

The protection of the human environment from the harmful effects of automotive transportation must be consistent with the present guidelines on the basis of a long-term comprehensive program for improving the organization, safety, and standards of traffic in the Bulgarian People's Republic in the Eighth Five-Year Plan and in the period through 1990, in stages, as follows:

Organizational-technical measures must be formulated and implemented between 1980 and 1982 for which the necessary conditions exist and which will not require substantial capital investments but will yield immediate economic and socio-ecological results. This requires the following:

Improvements in the organization of traffic in intensive automotive traffic areas by gradually eliminating the use of trucks and passenger cars from the central part of Sofia and big cities, the creation of pedestrian areas and bicycle paths, encouraging the building and utilization of parking areas in suburban zones and around main arteries and tangential tracks, thus limiting street parking;

Undertaking the accelerated paving of streets which absorb the main automotive traffic in Sofia and other big cities as the most effective means for the reduction of noise and vibrations;

On the basis of ecological requirements, regulating the access of motor vehicles to the mountains and recreation centers and sites for rest and tourism, by organizing the necessary parking and servicing facilities;

Improving control in technical tests of automotive vehicles and in the course of their operation, and banning the use of motor vehicles which pollute the environment in excess of admissible norms as a result of functional irregularities;

Experimenting with, producing, and applying domestically developed systems for the conservation of fuel and reduction of emissions of noxious substances contained in burned gases;

Organizing the collection and preservation of used lubricants, worn-out tires, and other wastes generated by automotive vehicles, to be used in the subsequent stages; to this effect the existing material and technical facilities must be expanded and improved;

The drafting and technical solutions and the undertaking of work on the measures stipulated for the subsequent stages.

By 1985 technical measures must be implemented and urban construction and territorial construction solutions must be developed for the big settlements such as to insure a substantial reduction of the noise level and emissions of noxious substances in burned automotive vehicle gases. To this effect the following is necessary:

The organization of the accelerated conversion to propane-butane fuel for public taxicabs and light trucks in Sofia, Varna, Burgas, Plovdiv, and the biggest resorts and other areas;

The development and experimental use by public taxicabs and automotive vehicles in Sofia and cities with intensive automotive traffic of systems for electronic ignition control;

The formulation and application of highly effective catalytic neutralizers for automotive transportation in underground mines, in drilling tunnels, and in open pit areas, in Sofia, and in areas with strong air pollution; the installation of catalytic neutralizers in all gas-operated lift trucks;

The expansion of electrification in public transport and the accelerated conversion of freight and automotive transport vehicles to diesel engines with improved qualities in heavy traffic areas or areas with adverse ecological factors;

Mastering the production of noiseless tires, insuring their utilization by transport vehicles mainly in big settlements and recreation centers;

Insuring the restoration of no less than 25 percent of worn-out motor vehicle tires and the effective utilization of non-reusable tires;

The continued building of bypass roads for main and first-grade arteries crossing settlements with a population in excess of 15,000 and in recreation centers of national importance, and the building of straightways and necessary railroad overpasses in big settlements;

The development of the necessary servicing facilities for repairing and servicing automotive vehicles in Sofia, the big settlements, the resort centers, and along international roads and international tourist centers;

Completing the building of diagnostic and control centers in automotive and service enterprises and equipping them with the necessary apparatus and installations for testing the technical condition and level of emissions of noxious substances in the burned automotive gases;

Procuring the necessary spare parts for the maintenance and repair of automotive vehicles in accordance with the norms and stipulations governing environmental protection and traffic safety;

Including in the planning of new housing complexes and in updating urban construction solutions the mandatory building of public underground and surface parking facilities in accordance with ecological requirements and forecasts on the development of automotive transportation;

Particular attention to be paid to the accelerated building of proper parking areas equipped with basic facilities and technical means, adjacent to the tangential arteries in outlying districts and the entrances and exits of main arteries, optimally connected with the public transport system;

The organization of areas for the washing and cleaning of private cars in the microrayons;

The testing and application of automated systems for observation and information concerning the level of emissions of harmful substances and noise caused by automotive transport along heavily traveled streets in Sofia and the big settlements as part of the unified observation and control system;

The gradual installation in Sofia and the big settlements of automated traffic control systems and the decisive improvement of technical facilities for traffic control, traffic light systems in particular.

In the period through 1990 measures to be implemented whose development and application will require extensive scientific studies and considerable capital investments will include the following:

The use of new ecologically clean fuels, and the partial use of hydrogen fuel, using the experience of the USSR and other countries;

Insuring the effective utilization of the achievements of scientific and technical progress for developing the use of electronics in motor vehicles on the basis of cooperated production of microprocessors and other electronic systems;

The development of the necessary production capacities for the regeneration of no less than 80 percent of the lubricants used in automotive transportation and the recapping of all suitable tires;

A base for service facilities in the country must be developed in its essential lines and the subscription system must be adopted for the technical servicing of private automobiles;

A system of parking areas must be provided with a view to preventing the parking of automotive vehicles outside stipulated areas;

The main road network and main arteries and streets in Sofia and the big settlements must be reconstructed, modernized, and asphalted;

The crossing of vehicular traffic must take place at different levels and automobile and pedestrian traffic must be separated;

Road and street arteries must be planted in vegetal species resistant to the harmful substances emitted by automotive vehicles;

The installation of automated traffic control systems and automated systems for control of air and noise pollution caused by automotive vehicles must be completed in the capital and the big settlements;

The State Council considers that improving the organization and upgrading the quality and effectiveness of administrative activities are of decisive significance in protecting the human environment from the harmful effects of automotive transportation. Now the main task is to insure the comprehensive solution of the problems on the economic approach, expand the state-public principle and decisively upgrade the role of specialized state and public control.

To this effect the obligations of the following have been defined: the Committee for the Protection of the Natural Environment, the Committee for Architecture and Public Works, the Ministry of Internal Affairs (KAT [Automotive Transportation Control] Administration), the Ministry of Transport (DAI [State Automotive Inspectorate]), the Ministry of Public Health, the Ministry of Public Education, the Ministry of Chemical Industry, the Ministry of Machine Building, the Ministry of Electronics and Electrical Engineering, and the State Committee for Planning.

Within the framework of their range of competence the people's councils shall organize, within their right of control of their territory the overall activities related to the struggle against the harmful effects of automotive transportation. Through urban planning and decisions and in accordance with ecological considerations, they shall insure the development of the road and street network and the

effective control of traffic flows and take measures to improve the structure of public transport and facilities for the technical servicing and maintenance of state and private motor vehicles.

As a public-state organ, in accordance with the new content of activities for insuring the safe traffic of motor vehicles and the ecological safety of man and the preservation of the environment, the Central Traffic Safety Commission shall organize, coordinate, and control the implementation of programs, standards, and requirements on the protection of the environment from the harmful effects of automotive transportation.

In considering the ever-growing role of the public in the development of a climate of social intolerance of the violators of nature and hygiene safety regulations, the State Council asks of the Fatherland Front, National Committee for the Protection of Nature, Bulgarian trade unions, Dimitrov Komsomol and Bulgarian Automobile Association to undertake specific ideological-educational work among working people and the youth for upgrading the knowledge of the ecology and decisively improving the discipline of motor vehicle drivers and pedestrians.

The mass information media shall engage in systematic propaganda-explanatory and educational work to insure the active and effective participation of the population in the struggle for the elimination of the harmful effects of automotive transportation and to create a climate of public intolerance of the violators of ecological requirements.

The State Council expresses its confidence that all citizens and vehicle drivers, imbued with a feeling of duty and love for Bulgarian nature, will display high socialist conscientiousness and will actively join in the struggle for the protection of the human environment from the harmful effects of automotive transportation (BTA).

5003
CSO: 2200

POLLUTION OF RIVERS IN PRAHOVA COUNTY DECRIED

Bucharest FLACARA in Romanian 22 Jan 81 p 13

[Article by Oprea Georgescu: "An Imperative of the Modern Age: Do Not Pollute!"]

[Excerpts] At the Prahova Office of Water Management in Ploiesti we spoke to Eng Matei Nicolae, director, and Eng Tatiana Pavel, chief of the management office.

[Question] Comrade director, please tell us briefly about the activity of the Office of Water Management of Prahova County, a county which is very industrialized and which has large tourist facilities.

[Answer] We administer about 1,400 km of rivers. In addition to the surface hydrographic system, we also monitor the underground water system. An important task of ours is the prevention and elimination of the dangers of floods. But our main task is the preservation of the quality of the water by ensuring the quality parameters specified in regulatory acts concluded with consumers.

[Question] What are the regulatory acts governing the obligations of consumers?

[Answer] At the beginning of an investment project, a water management agreement is signed which imposes conditions for waters resulting from technological processes which can be discharged only by the implementation of quality standards set forth in regulatory acts issued by territorial water management units. This agreement states obligations regarding rationing of consumption, measures for reducing losses, for increasing capacities for collecting waters and conditions for the operation of purification installations and stations in accordance with quality indicators. Before the investment is commissioned, we issue a use permit which sets the conditions for the utilization of the water and which becomes a contractual obligation for the parties.

[Question] What are your obligations and what are the consumers' obligations?

[Answer] By the maintenance and operation work which we carry out, we assure the stabilization of the river bed and the regularity of the water flow. The consumers are obliged to keep consumption within the approved limits and to respect conditions for overflows.

[Question] How many sources of pollution are there in the county, Comrade Eng Tatiana Pavel?

[Answer] There are 300 of them. About 10 percent of them do not have purification stations, a problem which will be resolved in the near future. There are many enterprises whose purification stations are obsolete.

The Brazi and Teleajen petrochemical combines emit petroleum products and residues. Although the technological installation of the Brazi petroleum combine went into operation in the last quarter of 1978, the purification station is functioning only at the mechanical stage. The chemical and biological stages have not gone into operation yet. The Teleajen petrochemical combine's cracking installation went into operation in January 1979 but the equipment for the purification station has not arrived yet. The purification station in the Valea Calugareasca chemical combine was supposed to go into operation in 1975. It went into operation in the third quarter of 1980 and its capacity has been exceeded.

[Question] What is the result of this state of affairs?

[Answer] Pollution of the water. Each day, the Busteni paper factory emits 31,000 kg of paper fiber and pulp. Each day, the Brazi petrochemical combine emits 16,000 kg of suspensions and 8,000 kg of petroleum products; the Valea Calugareasca chemical combine emits 232,000 kg of suspensions, 644,500 kg of residues, 314,000 kg of sulfates which destroy flora and fauna, 20,118 kg of chlorine, 13,040 kg of calcium, 335 kg of iron.

[Question] The figures you have given me seem to be incredible. What prospects do you have for putting an end to this abnormal situation?

[Answer] Through the use of the stations for collecting samples and the laboratories we are able to discover abnormal or dangerous situations immediately. Although, recently, the awareness of the problem and the desire to cooperate have increased, we still have much to do before we can speak about a normal situation. In 1980 we had to issue 159 reports of violations by persons guilty of violating the Law on Water Management. The majority of them were for accidental pollution.

[Question] What fines can you set?

[Answer] From 300 to 1,000 lei. If they are paid in 48 hours, at least half of the minimum fine, that is, 150 lei.

The greatest offenders are the agricultural units, the state agricultural enterprises, the agricultural production cooperatives, the centers for the mechanization of agriculture and the vegetable and fruit centers use pesticides, insecticides and fungicides. The solutions are prepared in improvised installations. After the containers are washed, the water is thrown into streams or rivers or even on the ground, contaminating the phreatic water. Despite the fact that the substances are particularly harmful and despite the fact that the Ministry of Agriculture and the Food Industry was informed, the proper washing and neutralization stations for such operations were not set up.

[Question] What rivers yield fish today? I am asking this because this seems to be a particularly eloquent indicator of quality.

[Answer] The Teleajen and all its tributaries, before the Valea Calugareasca chemical combine, the Cricov Dulce and Azuga, upstream from the city, the Pravita as far as Filipesti.

[Question] In Prahova and Ialomita?

[Answer] In Prahova, 14 cities which do not have purification stations or which have obsolete stations have overflowing sewers.

[Question] Comrade director, we would like you to draw some conclusions from our discussion.

[Answer] The most difficult situation in regard to pollution of waters was in the 1976-1977 period. The situation has improved because water pollution has begun to be taken more seriously by technologists. Large amounts of money have been allocated for the regulation of this situation. Some 200 million lei have been allocated in the Brazi petrochemical combine, 43 million lei in the Teleajen chemical combine, in Refinery No 1, and 45 million lei have been allocated for the Corlatesti purification station. The purification stations have begun to be considered as part of the technological procedures and treated as such.

However, a certain lack of interest is still observed in some places. People who are not sufficiently trained are assigned to work in the purification stations. Not too much thought is given to the fines which could be applied. I feel that the education work with each individual worker should be intensified. In agriculture, especially, which is being intensified and industrialized today, one should act with more firmness and responsibility. Pollution is a problem affecting all of us and all of us should participate in its solution.

CSO: 5000

POLLUTION OF NIGUA, YUBASCO RIVERS NOTED

Santo Domingo EL NACIONAL in Spanish 11 Dec 80 p 27

[Article by Angel Valenzuela]

A committee for the conservation of the natural resources of San Cristobal has requested that the government ban the extraction of construction materials from the Yubasco and Nigua rivers.

The committee points out in a press release addressed to EL NACIONAL that the indiscriminate extraction of materials from these two rivers has caused damage to an untold number of lots belonging to the Dominican Agrarian Institute.

The committee notes that the community of San Cristobal is witnessing the drying-up of the Nigua and Yubasco rivers and the depletion of its flora and fauna, as a result of the extraction of construction materials from the riverbeds.

The committee adds that "we are now and will continue to be opposed to the efforts of a social sector, in its excessive zeal for wealth, to destroy a people, because whenever natural resources are exploited without regulation this brings about environmental imbalances and changes in the community's social customs, as well as affecting its fauna and flora."

It declares that "tilapias," shrimp and other species that were a source of food for the community have disappeared from the Nigua and Yubasco Rivers, and furthermore, vegetation species, such as the oak, "corazon de paloma," acacia, sandbox tree, pome, mango and others have become extinct.

The press release states that the committee for the preservation of San Cristobal's natural resources was created for the purpose of permanently defending this province's natural resources.

The organization indicates that with the extraction of construction materials the Samangola, Los Cacitos, El Pomier, La Toma, Cambita Sterling, Junda-Juna, Sabana Toro, El Fondo, El Centro and Puente Yubasco sections have been damaged.

9661
CSO: 5000

BRIEFS

LOST FARMLAND--Government's decision to continue construction of the racing complex shows nothing less than contempt for farmers and the people of Trinidad and Tobago. This is the contention of the National Food Crop Farmers' Association, which said 600 acres of agricultural land was going to waste, when farmers were in desperate need of land for their crops. The association accused Government of lack of proper planning, in that scarce resources were being used for "the benefit of a few, at the expense of many." [Text] [Port-of-Spain TRINIDAD GUARDIAN in English 5 Jan 81 p 3]

WATER PROBLEM--Chairman of the Tobago House of Assembly, Mr. A. N. R. Robinson, will visit the treatment plant at Courland Waterworks in Plymouth tomorrow morning, and on Wednesday afternoon he will visit Hillsborough Dam and Greenhill Reservoir. A release from Mr. Robinson's office yesterday said the island was experiencing a serious water crisis, and if steps were not taken to deal with the situation, it would worsen during the dry season. Mr. Robinsin will be accompanied on the visits by Mr. Hochoy Charles, Mr. Samuel Toby and Mr. Everett John. [Text] [Port-of-Spain TRINIDAD GUARDIAN in English 5 Jan 81 p 3]

CSO: 5000

COUNCILLOR CALLS FOR REFERENDUM ON DUMPING SLUDGE IN SEA

Johannesburg THE CITIZEN in English 26 Jan 81 p 11

[Article by Tim Clarke]

[Text]

DURBAN. — sludge-in-the-sea problem, which could vitally affect the holiday trade, took a new turn at the weekend with a local city councillor calling for a referendum on the issue.

Mr Peter Mansfield, who is a member of the Management Committee of the Durban City Council, said the only way to resolve the dispute was by a public referendum.

He said there were many people who were in favour of the experiment, but equally there were thousands of ratepayers who were against it. Their chief fear was that it would ruin the marine life and environment along the Natal coastline.

A public meeting was being held in late February to debate the issue. He hoped that ratepayers would attend the meeting in their thousands.

The Mayor of Durban, Mrs Sybil Hots said yesterday she welcomed the idea of a referendum. She felt that many people were for the idea but many were against and a referendum would help clear the air.

The Durban City Engineer, Mr Don MacLeon, who caused consternation when he announced last week a trial period for the sludge in the sea scheme had begun in October, said he had nothing to hide. He said that everything he had done was in full accordance with municipal regulations.

One of the criticisms of the Durban Council is that they required a permit from the Department of Water Affairs to release the sludge into the sea.

CSO: 5000

BRIEFS

FLOOD DAMAGE TO FRUIT 'INSIGNIFICANT'--The damage to Western Cape deciduous fruit has a result of recent heavy rains and flooding is expected to be insignificant, a spokesman for the South African Deciduous Fruit Board said yesterday. The spokesman said this applies to both the quality and the quantity of the crop. The spokesman said a lot depends on temperatures over the next 40 hours because if it becomes too hot bursting of the bigger berries could be problem. He said because of the heavy rains a slight wind and cool conditions would be ideal for the crop at moment. He said the bulk of the big volume fruit is of the late varieties which will only be ripe on two weeks. These include pears, apples and grapes. There was some bursting he said, and wind drop damage to plums and about 10 percent of this crop has been damaged. He also said Alphons (red) grapes in the Hex River Valley have suffered 50 percent damage and as much as 80 percent on certain farms, but this variety accounts for only 15 percent to 20 percent of the total grape crop. The spokesman said the canning industry appears to be more badly hit by the flooding in the Montague, Robertson and Ashton areas, whereas damage to the fresh fruit industry in the Elgin, Grabou, Ceres and Langkloof areas is less extensive. [Text] [Johannesburg THE CITIZEN in English 30 Jan 81 p 25]

CSO: 5000

STEADY DESICCATION OF ARAL SEA PORTENDS FUTURE WATER PROBLEMS

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 26 Sep 80 p 4

[Article by O. Tlenbekov, head of the laboratory of the Kazakh Scientific Research Institute of the USSR State Committee for Hydrometeorology and Environmental Control, candidate of geographical sciences: "Aral: Today and Tomorrow"]

[Text] The Aral Sea is one of the largest internal reservoirs of the world. It has been famous for its wealth since ancient times. Hundreds of thousands of centners of highly valuable commercial fish have been caught here, sturgeon, barbel, Aspius aspius and pike perch. The Aral also played a significant role as a shipping reservoir on which national economic cargo was extensively shipped between Kazakhstan and Uzbekistan.

In recent years attention to the Aral Sea has grown sharply. It has become the subject of study of scientific and planning institutions. Many printed publications treat it. Such intensified interest and pronounced concern for the future of the Aral stem from the fact that in the last 10-15 years considerable changes have taken place in its hydrological regime that are due to the intensive drop in its level and the desiccation of shallow sections.

The largest rivers in Central Asia, the Amudary'ya and the Syrdary'ya are replenishers of the Aral Sea. Due to the extensive development of irrigated farming and the construction of a number of reservoirs in their basins in recent years, the total volume of river run-off entering the sea has significantly diminished.

The drastic reduction in run-off of the Syrdar'ya River is aggravated even more by the fact that downstream several places are now covered with thick filled earth dams and the water is directed into delta lakes that have fishing value. Thus, starting in 1974, the Syrdar'ya did not have a constant surface run-off into the Aral Sea. The Amudar'ya run-off was diminished by almost 75%. Consequently, starting in 1960 the Aral level began to drop, and by now has declined by almost 7 meters. The area of the sea has been curtailed by 15,000 square kilometers. The water salinity has significantly risen.

The changes in the hydrological pattern of the sea and in the river downstreams resulted in a sharp drop in the reproduction of fish reserves. Whereas in 1963 480,000 centners of fish were caught, in 1978-1979 only 40-50,000 centners. The muskrat industry practically stopped.

The forecasts are not comforting. The process of decline in the sea level and reduction in its area will continue. According to preliminary estimates of the Aral water balance, its level will drop by the year 2000 by almost 19 meters. The sea area will be 25,000 square kilometers instead of 65,000 in 1961. This means that the Aral will be divided into three isolated stretches.

The fate of the sea is linked to a great degree to the development of irrigated farming. The region has favorable land and thermal power engineering resources for farming different grain, cucurbitaceous and commercial crops. But this requires the maximum use of local water resources. The greater the scales of irrigated farming in the Aral region, the less water the sea will receive.

As the Aral dries up, large areas of the bottom will be exposed. Salt-saturated deposits can be exposed to wind transfer to the surrounding territory, the irrigated regions of Central Asia and Kazakhstan.

How can the negative consequences of Aral desiccation be eliminated or alleviated? This requires extensive scientific studies and planned developments to prevent the Aral region from becoming a desert and controlling the process of decline in the sea level.

It should be said that it is impossible to stop this process. It can only be slowed down. First, this can be done by means of careful planning of the intra-administrative and territorial distribution of local river run-off, as well as the introduction and broad application of economically advantageous types of irrigation (intra-drop, overhead irrigation, etc.). These will somewhat reduce the diversion of water entering the Aral. Second, if the engineering systems on the run-offs are reconstructed, one could prevent water losses in the internal-drainage basins and increase the entrance of drainage water into the Aral. Finally, by extensively employing proved reserves of underground water for irrigation one can also reduce the consumption of run-off water and increase the replenishment of the Aral.

In addition, a whole series of different versions has been suggested for separating individual sections of the sea by dams that will reduce evaporation from the water surface and will preserve some of its sections for intensive fishing.

The suggestion to preserve the northern section of the Aral Sea after separating it from the remaining by a thick dam placed across the Berga strait, from the mouth of the Syrdar'ya River to Kokaral Island and further, with a regulating sluice gate to Karatyup Peninsula is of definite interest. In order to maintain the level in this separate reservoir at current marks it is necessary to send the run-off from the Syrdar'ya River into it in a volume of no less than 5 cubic kilometers per year. The creation of this reservoir in the northern Aral will preserve the industrial enterprises associated with it and the populated areas, including the city of Aral'sk. The reservoir itself can be used for intensive, controllable fishing.

The western deep section of the sea can be preserved for these same purposes. It will be a lake reservoir roughly 200 kilometers long and 50-60 kilometers wide. This reservoir will be fed by Amudar'ya water in a volume of no less than 12 cubic kilometers per year.

The Aral problem is complicated, and it should be solved in a comprehensive manner. For example, the soil scientists and botanists should study the processes of desiccation

of the Aral region and make specific recommendations to secure the shifting sands, to convert the dry sea bottom into pasture lands and to make them suitable for agricultural production. The hydrogeologists need to evaluate the operational reserves of underground water of the Aral region and to make suggestions for their use in different branches of the national economy.

The fisheries are faced with a large task. It remains to determine the means of developing commercial pisciculture, including development of recommendations for introducing into the Aral new salt-loving forms of food organisms and fish species, as well as suggestions for organizing commercial lake and pond pisciculture in the downstream of the Syrdar'ya River.

Sociologists and economists should be included in a solution of the Aral problem even now. It is necessary to determine the paths for developing the productive forces under altered conditions, and to formulate measures to improve the social aspect of the population living in the Aral region. At the same time they should focus serious attention on the possible changes in the medical and biological situation in this region.

Desiccation of the Aral places a whole series of problems on the agenda that are associated with a change in climate, the need for redirecting Siberian river run-off into this region, etc. They can be solved with the broad and active participation of scientists and specialists of different profiles and departments.

The Aral problem is very complicated. It radically affects all aspects of many branches of the national economy and the living conditions of the population. The fate of the sea can therefore not be solved based on purely economic considerations alone. One should take into account the ecological importance of the Aral Sea, the nature of its interrelationship with the environment, as well as the possible general social and economic consequences of desiccation of the sea, a major and unique reservoir of Central Asia.

9035
CSO: 5000

POLLUTION OF LAKE NAROCH' DECRIED

Moscow PRAVDA in Russian 29 Oct 80 p 3

[Article by I. Novikov, PRAVDA correspondent: "Naroch' Waits for Concern"]

[Text] Nature was stingy in giving Belorussia seas, then was generous in splashing 10,000 lakes on its land. Lake Naroch' is a rare gem among them. It spread in the very center of the republic on an area of about 80 square kilometers. The water in it was exceptionally pure. In clear and calm weather one could see a coin 10 meters deep. After floating 1.5-2 kilometers from the shore, we observed how meter-long eels warm themselves in the sun between the islands of bottom algae or swiftly shoot under the boat, and how enormous burbot and pike glisten.

It is no accident that we have to speak about the cleanliness of this water and the wealth of the fish population in the past tense. The lake is asking for help and protection today.

I was given the following information in Belrybvod. In 1961 the Naroch' fishermen caught 1,520 centners of fish, and in 1968 slightly more, 1,900 centners. These are the data of recent years: 1976--846 centers, 1977--722, 1978--558 and in 1979 only 437 centners.

This is commercial fishing. The amateurs also assert that it is a rarity to catch a burbot or decent pike in the Naroch'. At one time the whitefish came here, but it disappeared. Now the fishing catch is most often ruff and gudgeon.

"I have been observing the Naroch' for many years,"says Academician of the Belorussian SSR Academy of Sciences G. V. Bogomolov, " and I can testify with bitterness that the lake is degenerating. Many chemical and organic fertilizers and herbicides flow from the surrounding fields into it. The chemical composition of the water is changing. Land-reclamation work in the lake zone is disrupting its water balance. Each year the shallow coastal zone has a more extensive and denser population of reeds and algae. In a word, many problems have arisen and their solution cannot be put off if we want to see the lake as nature created it."

One of the problems is organizing recreation on its shores. The zone of Lake Naroch' has been designated a resort. One would naturally expect that economic activity here is subordinate to the problems of preserving the beauty and the curative resources of nature's gem, and that new health resorts would develop without disrupting the harmony of nature but supplementing it with bright man-made features.

This is not happening at all. There are now 11 institutions in operation here for treatment and rest that have 5,065 places. They were built by different organizations and departments, according to their own understanding and limited potentialities, therefore the quality of the construction is low, the treatment plants and sewer systems are primitive, and there is no downpour sewer system. All of this leads to intensified pollution of the lake. Analysis of the water done by the sanitary service of the Belorussian SSR Ministry of Public Health showed that the bad "contribution" of the pioneer camp "Zubrenok," the Naroch' settlement and the Urliki village is especially noticeable.

Not only the water, but the air is polluted. Every institution has considered it necessary to have its own boiler house. They smoke as if competing with each other.

The situation with new construction is no better. The commission that recently studied the problems of developing a resort network in the region of Lake Naroch' established that resort development is slow, with gross violation of the schedules set by the republic government. What is even more surprising is that sanatoriums and holiday hotels are being built by poorly outfitted enterprises and organizations that are not capable of erecting a decent sanatorium. The leaders of the major plants and production associations, such as the Minsk Tractor Plant, the BelavtoMAZ and others, prefer to contribute resources to the health resorts in the far south. It is not so easy or quick to reach them from Minsk and there is a much smaller space for development. But prestige considerations primarily win out in the selection of construction sites for new sanatoriums or holiday hotels. As far as therapeutic factors are concerned, the Naroch' zone is not inferior to either the Crimea or the Caucasus. It is no accident that the stream of unorganized vacationers to the lake shores is constantly increasing.

The PMK-24 trust "Molodechnosel'stroy" was entrusted with erecting the new therapeutic institutions on the shores of Naroch'. It is a poorly outfitted organization that does not have highly skilled engineering and technical workers and blue-collar workers, and does not have the necessary production base. How can it build modern structures!

On fine summer days the people flock to the Naroch' zone. The vacationers do not always act as they should to protect nature. As a result, as a check showed that was made by the Kirov Belorussian Technological Institute, 93 hectares of forest on the lake shore are dying. This is especially noticeable in the region of the youth base of the Belorussian State University, the summer recreational cities near the villages of Stepenevo, Urliki and the summer tourist base "Naroch'." Two hundred and ninety-two hectares of forest (that is 11.6% of the forest area in the zone) has been classified as sections with moderate violations. No control has been set up for preservation of the forests around the lake. On individual sections, for example, near the tourist base of the council on tourism, the pioneer camp of the Minsk Worsted Plant, the pioneer camp "Zubrenok, the trees are cut down without control. Many are cut, and no one restores the forest. Simple restoration is not required here, rather the transformation of the forest tract in accordance with the conditions of mass "onslaught" of the vacationers.

The question arises: who is responsible for Naroch'? Who should be concerned about preservation of the lake?

In the Belorussian SSR State Committee on Environmental Protection, we were told that the department cannot be named the competent master of the lake, since the committee has only been entrusted with partial control over certain questions of environmental protection. Belrybvod, for example, is obliged to answer for the preservation of the fish resources, the Belorussian Ministry of Water Management for the hydrological condition and the quality of the meliorative work, the Belorussian SSR Ministry of Forestry Management for the preservation and renewal of the forest and forest animals, the Belorussian Ministry of Agriculture for the correct use of fertilizer in the fields in the health resort zone and construction of animal husbandry farms here, the Belorussian SSR Hydrometeorological Service for the purity of the air, etc. They all have monitoring services with special staff of workers.

Practice has shown that such dispersal of the monitoring subdivisions over numerous departments weakens the effectiveness of their efforts, leads to dissipation of forces and resources, and at times, to unhealthy competition. For example, the workers of Belrybvod and the Belorussian SSR State Committee for Environmental Protection instead of uniting efforts to attain order on the lakes and rivers, are conducting an interdepartmental skirmish.

Not only the Naroch', but the remaining 10,000 Belorussian lakes and numerous rivers of the republic need a true master, one who will be concerned not only about their use, but also their preservation.

As for the Naroch' as a health resort zone, the Belorussian council of trade unions could become its competent master. It, like no other, heads the further development of the republic health resort, and it, like no other, should control the observance of environmental protection standards that correspond to the health resort.

9035
CSO: 5000

BALTIC COUNTRIES PARTICIPATE IN BALTIC SEA POLLUTION STUDY

Riga SOVETSKAYA LATVIYA in Russian 1 Nov 80 p 2

[Article by S. Il'icheva: "Special Baltic"]

[Text] The Baltic Sea has attracted especial attention in recent years. The people of seven countries that are located on the Baltic shores are faced with an urgent problem, reducing to a minimum pollution of the Baltic with petroleum products, heavy metals and pesticides.

Pollution of the sea with organic substances entering with waste water results in a decrease in the species composition of the aquatic organisms and a drastic increase in individual species, including pathogenic bacteria. This trend is especially noticeable in the Gulfs of Riga, Kurshsk, Gdansk and Finland.

Now many branch, academic scientific research institutes, departmental and other organizations of the Soviet Union are working to create a complex system for protecting the Baltic water. The Institute of Biology of the Latvian SSR Academy of Sciences has been entrusted with studying the condition of the Soviet territorial waters in the Baltic Sea.

These studies are associated with regular sea expeditions. The institute is now compiling scientific reports on the results of the just completed summer expeditions. Our correspondent S. Il'icheva was told by the director of the Institute of Biology of the Latvian SSR Academy of Sciences, G. P. Andrushaytis about some results of their work.

All types of pollution, whatever kind it is, represent a danger both for man and inhabitants of the sea. The Baltic is a fairly global ecological problem. It should be solved on an international scale. All seven states, the USSR, Denmark, Finland, the GDR, the FRG, Poland and Sweden that are located in its basin understand this well. After a whole series of joint symposiums, meetings and conferences the international convention on protection of the Baltic Sea waters became a specific expression of this. It reflects the main scientific task of the interested countries. This is not only to study the extant biological equilibriums, but also those viable equilibriums that should be preserved at the modern level of industrial processes. According to the convention, all seven states must stop discharging waste water into the sea and the rivers that enter it by 1985.

As for our country, the USSR has set up a committee for protection of the Baltic water and adopted the corresponding decree of the government that provides for many practical, scientific-technical and ecological measures.

For the fourth year already the colleagues from the department of hydrobiology of our institute, in fulfilling their tasks in the framework of the convention, are conducting biological charting of the Soviet territorial waters. The expeditions of our research ship "Dzintaryura" where every summer and deep into autumn specialists in many branches of hydrobiology work, are studying the enormous Baltic region. It starts from the western sea boundary of the USSR at Kaliningrad, covers the mouths of all major rivers, and stretches to Leningrad, including the Gulf of Finland. Our stations, that is quite definite spots in the sea where the "Dzintaryura" drops anchor, are located near major ports, opposite the mouths of the Pregoli, Neman, Daugava, Venta, Neva and many other rivers. This season we mainly completed clarifying the standard discharge of waste water and detected definitive biological criteria along the entire aqueous western boundary of the USSR.

In the report that we will present by the end of the year or the beginning of the next to the Giprovodproyekt, primary attention will be focused on the Gulf of Finland. Here we are on the alert for a change in the population of saprophytes, individual forms of phyto- and zooplankton that are very important in the cycle of substances in nature and in the biological purification of reservoirs.

The cycle of research that was done on "Dzintaryura" this summer covered an investigation of the aquatic medium around the offshore dumps. As is known, dredging operations are done every year in the Baltic ports. The wastes from them are removed to definite offshore squares. Our scientists have found a certain negative effect of these dumps on the environment. It remains to formulate recommendations for reducing this effect.

As for the Gulf of Riga, here we are working jointly with the USSR Hydrometeorological Service and are setting up scientific foundations for a system to monitor the environment, a so-called global monitoring system. One should pinpoint what kind of biological parameters should be the basis for monitoring the state of the environment and predicting its future.

The hydrobiologists spent a whole month one summer at sea, 70 kilometers from the Estonian port of Pyarnu. In many years of studies jointly with the Tallinn Polytechnical Institute we had to determine the standards for the maximum permissible emissions and concentrations of heavy metals. The technique for studying the processes of heavy metal accumulation in water and their effect on the micro- and plankton organisms brings the experimental conditions the closest possible to nature. The effect of different heavy metal concentrations is studied in an isolated medium. "Dzintaryura" is anchored at a station, while nearby plastic 0.5 cubic meter sacs with sea water bob on floats. The special plastic is an excellent light transmitter. The verification conditions are created in these vessels. We determine the precise doses of harmful admixtures in which the micro-inhabitants of the sea can live and reproduce, or on the contrary, die.

Last season this experiment was also carried out in the Gulf of Riga.

The scientific research ship of the Estonian SSR Academy of Sciences "Ayu-Dag" has not yet returned to its home port. Three of our hydrobiologists are currently aboard. They

are participating in a large research project according to the CEMA program. The Estonian colleagues are involved in problems of marine physics, hydrobiological processes, while we are interested in the capacity of bacteria to destroy products that are thrown by people into the sea and are foreign to their habitat, including those that fall onto the water surface from the atmosphere.

The Latvian hydrobiologists have started to study the simplest organisms, single-celled animals, for the first time on these large water routes. There are so many of these organisms and they are so important in the marine ecosystem that it is simply impossible to solve the problem of protecting the sea without considering the reaction of the protozoa to pollution.

The Baltic Sea has a unique character. It appeared on the earth at a considerably later period than the other seas. It has few extremely deep areas. It is connected to the ocean by narrow straits resulting in a renewal of the water in it once every 40 years. The Baltic has a special saline regime, which has also determined the existence of a limited number of species of living organisms in it. The main problem is to determine the scientifically substantiated conditions in which the Baltic could live in accordance with the demands of industry that does not suppress its ecological condition with its wastes.

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CSO: 5000

LAND RECLAMATION PROGRAM THREATENS VOLGA

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 11 Nov 80 p 2

[Article by A. Shmarinov, artist: "The Volga Also Comes From Streams"]

[Text] From the editor. Tomorrow a scientific practical conference of young scientists, specialists, Komsomol workers and active members of the All-Russian Society of Environmental Protection on protecting the natural resources of the Volga basins opens in Kuybyshev. We hope that all aspects of the problem stated by our reader will be examined with deep concern. It seems that the appropriate organizations and departments should take an interested part in its discussion.

There are unique corners of nature in central Russia that are dear to the heart. The poor lands are not elevated with picturesque hills, are not decorated with tall leafy forests, majestically reflected in full rivers. They spread in a plain under an endless sky and are modestly decorated with copses and dense clumps of bushes.

The people who were born in these places love the unhurried beauty of their own nature. They love the land on which their forefathers lived and worked. Such a corner that is dear to my heart hides behind Kimry in the headwaters of the Malaya Puditsa, on the road from the village of Troitsa-Kochki to the villages of Utkino and Yershovo. By the way, only the name of the latter remains, but these names of the villages characterize this locality very accurately. Ducks and other swamp birds willingly nest in the hummocks in the Puditsa floodplain. Fish are found in the river and the numerous transparent rivulets that enter it.

The birth of rivers are visible on this comparatively small section, and not only the Malaya Puditsa. The Kimerka collects water here, and the Soz', flowing from the nearby Velikiy Lake gathers strength in these springs, and the Bol'shaya Puditsa reaches high water not far away. They all then enter the Volga. The water, the main contribution of these not very water-logged areas, has been actively involved in economic activity for a long time.

The reader has probably guessed the reason for this preface. The land developers came. They worked in the region for several years. And they worked thoroughly. If you travel from Kimry to Troitsa-Kochki, on the right side of the road you will see a bare plain stretching for many kilometers. You will notice clumps of construction trash only in certain places, and one or two miraculously spared trees that mark the villages that used to stand there. A fertile cornfield will probably emerge at some time on this wasteland, but that is not our concern here.

It seemed for a long time that wisdom and caution would be shown in planning the drainage work in this area. The state approach to this important matter should have been to tell the plan executors that the water-collecting area of several Volga tributaries should be by-passed. Moreover, I repeat, its size is miserly not only on the scales of the Kalininskaya Oblast, but even in the framework of the small Kimrskiy Rayon. But this did not happen! Unfortunately, the serious matter of land reclamation that requires a scientifically substantiated, complex approach, in other agencies was literally reduced to a hunt for small rivers. It is done by standard. The upper swamps that feed the river are drained, the bed is deepened and straightened, and channels from adjacent springs are dug through to it. You do not have to go far for examples. Near Abramtsev in Moscow Oblast a small river flowed on the sovkhoz territory at one time. It was destroyed by the following method. The bed was straightened, a channel was dug through, and the rivulets were drained. It remained to hang little bridges from which the women at one time washed their clothes above the blue channel, where now one can only guess at dampness on the very bottom.

One can cite many examples. They are written about with alarm in the newspapers and magazines, but the attack on the rivers still continues This is what happened in the region of the Malaya Puditsa catchment area. The bushes were cut, drainage pipes were laid, sections were plowed up with springs in the river floodplain, and the bed was dug up and straightened. They started draining the mossy cranberry swamp.

Academician D. S. Likhachev wrote in an article published on the pages of PRAVDA: "Has not human labor improved, say,the Central Russian nature? The peasant for centuries, without bending his back, worked, levelled hills and dales with a wooden plow, harrow and scythe. This is why the Central Russian, and especially the near-Moscow nature is so nice. The peasant left the forests and groves intact, by-passed them with his plow. This is why they grew up in even clusters as if set in vases for decoration and joy." Roughly this system of management that is the most justified for the nonchernozem land developed in the headwaters of the Malaya Puditsa. Numerous fields were alternated with birch groves with "sweaty" spring areas or simply natural field-protecting forest tracts. They preserved the snow on the fields in winter, withstood the freezing of winter crops, and in the summer guarded the light peat soils from wind erosion. It seems that the Russian peasant combined aesthetic principles and a love for his nature with efficient use of nature.

The 18th article of the USSR Constitution states: "In the interests of present and future generations in the USSR the necessary measures are being taken for the protection, scientifically substantiated and efficient use of the earth and its resources, water resources, plant and animal world..."

Practitioners are still encountered who strive to extract a specific, current benefit from everything. The forest is for firewood, the swamps for peat, the river floodplains for fields, etc. They similarily adopted the plan for land reclamation in the nonchernozem area as a call to destroy the wet areas on the territory under jurisdiction. You can turn the land into a desert with such an approach! Cases have taken place where sand and dust storms have developed after drainage. I will cite a recent publication in PRAVDA. There is an alarming signal from the Brestskaya blast. "The water flowed unobstructed on dug-out channels into the Bug and Mukhavets Rivers. Soon a shortage of moisture was evident. A lake wind began to blow over the tilled, sandy soil. On the parched swamps, the hatchings of young ducks who

had not learned to fly became easy prey for the fox and hawks. It was sad to see the irreparable damage that had been done to the locality."

What about the wild life. The mossy swamp that is to be drained near Troitsa-Kochki is the refuge for one of the most southern populations of white partridge in the European sector of the country. It should be protected. The fact that it nests here in large numbers is no secret to the passing poacher and is well known to the local authorities. How can the draining of this region be evaluated in light of the recently adopted "USSR Law on Protection and Use of the Animal World"?

In my opinion, discrepancies of this type exist in the fundamentals of forest legislation. For example, one of its articles calls for forest management that guarantees "intensification of water-protective, defense, climate-regulating, normalizing and other useful natural properties of forests..." But there is no section on the criminal or other responsibility for destroying individual valuable types of trees or the death of whole forest tracts due to the reduction in subsoil water because of land reclamation errors. In the same way, the fundamentals of water legislation have not provided for responsibility for destroying small rivers or draining their springs. This results in their gradual depletion and death.

This is a very serious question for any error in land reclamation entails a practically irreversible process. It thus seems that all possible negative effects on nature should be specified in such a large and challenging state matter. An atmosphere of impatience should be created around the facts of unscientific, superficial and negligent attitude towards draining water-logged areas. This is mandated by the decree of the CPSU Central Committee and the USSR Council of Ministers "On Additional Measures to Intensify Environmental Protection and Improve the Use of Natural Resources."

The newspapers have repeatedly raised the question of the economic and ecological inexpediency of draining the headwaters of the cranberry swamps. Our Volga is also born among the swamps of the Kalininskaya Oblast. To destroy them means to deprive the river of the springs feeding it. The great river is one of the most significant monuments of history and nature. It should be preserved for future generations. This agrees completely with sound thinking and corresponds to the laws adopted in our country. We have touched upon the fate of a small section of the Kalininskaya blast where the catchment area of the left Volga tributaries is being drained. The program of land reclamation work in the nonchernozem area encompasses practically the entire territory of the upper and middle Volga that yields over 93% of its annual run-off. I would like to believe that in other regions and oblasts there is a more attentive and prudent attitude towards the fate of the great Russian river. It goes without saying that it deserves a special attitude. Its problems cannot be solved with a narrow view, in the extant framework of the territorial administration. The question of preserving the Volga is a national one. In my opinion, it requires the same set of measures that were taken for the Baykal in its time.

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BIOSPHERE OBSERVATION STATION SET UP IN TURKMEN SSR

Ashkhabad TURKMENSKAYA ISKRA in Russian 6 Dec 80 p 4

[Article: "The Biosphere Should Be Clean"]

> [Text] In the Repetek biospheric preserve of the Institute of Deserts of the Turkmen SSR Academy of Sciences, the expedition of the State Committee for Hydrometeorology and Envirnomental Control of the USSR, the USSR Academy of Sciences and the specialists from the Turkmen Administration for Hydrometeorology and Environmental Control has completed its research work. For a month the participants in the expedition conducted observations and studies on the level (background) of pollutants in the near-earth atmosphere, in the soil, in the vegetation, and selected sites for observation points of a background station created in Repetek. It is the first in the republic, and one of the first in the country.
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> The deputy head of the Turkmen Administration for Hydrometerology and Environmental Control, Chary Muradovich Geoklenov told the TURKMENSKAYA ISKRA correspondent, V. Obramenko, about the creation of the background station, the work of the expedition, and the observations that the colleagues of this station will make.

More attention is given each year to environmental protection and the efficient use of the natural resources. The successful development of the economy and improvement in the welfare and health of today's and future generations depend a lot on this. Unfortunately, the unfavorable effect of human activity on the environment has recently grown in the world.

The atmosphere is the main medium in which dust, smoke, carbon monoxide, herbicides and many other harmful elements, products of human activity, are disseminated. Some of them create stable compounds that are dangerous for human health and nature. The circular processes in the atmosphere can lead to their global spread. It is a generally known fact that traces of DDT (dust) were recorded in Antarctica, although it was used thousands and tens of thousands of miles from the glacial continent.

The negative consequences of human activity are not restricted to small regions, but cover ever greater spaces, creating a so-called background of pollution of nature: soil, water and atmosphere.

It has therefore become necessary to set up a complex specialized system of observation of the pollution level of the environment on a global scale in many countries of the world. It has become known as the monitoring system. It includes observation of the environment, modification of it, evaluation of the factors affecting nature, prediction of change in the background, etc. It is most convenient to make these observations far from industrial regions, in biospheric preserves such as our Repetek.

Observations of certain pollutants have previously been made. Participants in the expedition from the laboratory of atmospheric monitoring of the USSR Academy of Sciences expanded them, and made more thorough studies of the near-earth air layer, soils, and vegetation for their content of lead, mercury, cadmium and other substances. These data will become the references for further observations and studies. Temporary observation points have been organized and sites have been selected for permanent points. The colleagues of the Repetek background station have been trained in methods of taking air, soil and vegetation samples, determining the content of sulfur dioxide, sulfate and dust at the site, and also working with the most advanced instruments and units.

Repetek is particularly making observations on the unique filtration sample taker "Kiparis." It takes samples for further analysis of the air content of minimum quantities of carbon, sulfate, DDT and other pollutants.

Now the group of Moscow scientists, the deputy director of the laboratory of atmospheric monitoring, Doctor of Chemical Sciences F. Ya. Ravinskiy, deputy head of one of the laboratory sections G. L. Grek, and Yu. B. Cherkhanov and B. V. Pastukhov are studying and monitoring the environmental pollution at the Repetek station. The results of these studies will make a great contribution to environmental protection of our planet.

9035
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UKRAINIAN COMMISSION DISCUSSES NOISE ABATEMENT

Kiev PRAVDA UKRAINY in Russian 13 Dec 80 p 3

[Article: "Attack on Noise"]

[Text] The struggle against noise in the cities and villages of the republic becomes more specific and purposeful each year. The construction of by-pass roads in the region of populated areas, the timely and high-quality repair of the pavements on streets and squares, the allocation of special places for parking, constant monitoring of the activity of the industrial enterprises located in the residential zone, and other measures promote the creation of a favorable acoustic climate.

The acoustic climate in the Kievskaya, Dneprostrovskaya, Khar'kovskaya, L'vovskaya, Krymskaya, Sumskaya and Ternopol'skaya oblasts has improved for precisely this reason, the meeting of the permanent republic interdepartmental commission on noise control noted. This meeting took place in Kiev. The republic has already taken into account hundreds of "noisy" facilities. With the participation of GAI [state automobile inspection] improved plans have been formulated to organize transport traffic, the development and good order of residential regions with consideration for the municipal noise charts.

The participants of the meeting discussed the struggle against noise in the rural regions of the republic, as well as in the city of Sevastopol'and the industrial enterprises of the Kirovogradskaya Oblast. They examined the activity of the Lutsk municipal interdepartmental commission and heard a report on the course of the state certification and repair of vibration-acoustic apparatus. The work of the Yaltinskiy gorispolkom with letters of the workers was also discussed. Measures were planned for improvement in the development projects for the republic villages.

Plans were adopted at the meeting for the commission's work for 1981.

The deputy chairman of the Ukrainian SSR Council of Ministers, V. Ye. Semichastnyy, participated in the work of the meeting.

9035
CSO: 5000

RESPONSIBILITY FOR VOLGA POLLUTION PLACED ON MINISTRIES AND VOLGOGRAD PLANT

Moscow TRUD in Russian 24 Dec 80 p 2

[Article by A. Bityukov, deputy head of the Nizhne-Volzhskiy basin administration to regulate the use and protection of water,and O. Pozdnyakova, correspondent of TRUD: "Let the Volga Be Clean"]

[Text] Many foreigners come to Volgograd, including from the capitalist countries. Many are surprised when they take the river tram to the other shore of the river, to a beach located in the city limits. "Can one really swim in the Volga?" they in turn surprise the people of Volgograd with this question. After seeing the transparent water and the clean sand they no longer want to leave.

This is the normal picture. Those who are not informed are surprised. We know that to keep the Volga clean the state expends a lot of resources. About R 118 million were allocated for the construction of facilities for the efficient use and protection of reservoirs of one Volgogradskaya Oblast alone in the 10th Five-Year Plan. This money was used to build and expand the treatment plants. A system of reuse and circulation of water is being set up here that is unique in its scale.

By its decree for measures to prevent pollution of the Volga and Ural River basins, the CPSU Central Committee and the USSR Council of Ministers obliged the local party and soviet agencies to develop and implement measures for complete cessation of untreated industrial-general water emissions by 1980. The resources of the ministries and departments of the USSR whose enterprises discharged treated water into the municipal sewer systems had to be involved in this project. Accordingly, 29 water protection facilities were introduced into the Volgogradskaya Oblast.

But the situation at five others is alarming. The schedules for starting-up each of them have been repeatedly delayed, in violation of the party and government decree.

The Volzhskiy plants have been united into a closed circulating water system. Accumulating ponds and evaporators occupy enormous areas. The quality of the water makes it possible to use it for irrigation on farming fields. The subdivisions of the USSR Ministry of Water Management are not building them satisfactorily. Every year they only assimilate half of the planned capital investments.

The schedules for introducing circulating water supply systems in the southern industrial center of Volgograd have also been interrupted. The USSR Ministry of Industrial Construction must bear the responsibility for this. Its subdivisions were supposed to build a shop for complete utilization of lignin back in 1976 at the

biochemical plant. But they have not even started construction. The system of mechanical and biological purification is being built very slowly at the Svetloyarskiy plant of protein-vitamin concentrators.

At the same time,such enterprises as "Kaustik," and the oil refinery and steel wire rolling mill that are located here have had a responsible approach to the solution of the same tasks. The plant committees at these enterprises have also been actively involved in the environmental protection problem. This cannot be said of the trade union committees of the aforementioned enterprises. The majority of them have not even set up the primary organizations for environmental protection societies.

When you go downstream past Volgograd, it is clear how important the decision was to close the outlet of waste water into the river for industry at the northern and southern city limits. This also closes the Volga that stretches tens of kilometers in the beginning and end of the city from pollution. Protection of the river in the city limits is provided by two active phases of the Volgograd treatment works, and a third is now being built. The Volga in the Volgograd zone thus must be clean. But as they say, there is always a fly in the ointment. The metallurgical plant "Krasnyy Oktyabr'" has become this "fly." It stubbornly discharges poorly treated industrial water into the Volga. The damage this causes is great.

Back in 1977 the plant was supposed to build the first phase of a circulating water supply system for the clean cycle of the treatment works for the northern group of shops. But the USSR Ministry of Ferrous Metallurgy only developed the necessary measures the next year.

Now the first phase has been introduced, but it is only roughly 30% loaded,since pipes from the old shops have not been connected.

The leadership of the Nizhne-Volzhskiy basin administration and the USSR Ministry of Land Reclamation and Water Resources have warned the USSR Ministry of Ferrous Metallurgy that it will be forced to halt the operation of a number of shops. Unfortunately no measures followed after these warnings. Up to this day no schedules have even been set for putting the water protection facilities at "Krasnyy Oktyabr'" into operation. Moreover, the ministry is poorly financing their construction.

Checks by the workers of the Nizhne-Volzhskiy basin inspection and the hydrochemical laboratory have shown that the party and government decree on protection of rivers is not being fulfilled by the USSR Ministry of the Fishing Industry, RSFSR river fleet, and other departments that have a river fleet in the Volga basin. All the ships should be equipped with special devices to collect polluted water and other wastes. However, for example, the river fleet has not yet been equipped with special collecting vessels. The anchorages for the small ships do not meet the water protection standards.

It is impossible to by-pass yet another important question whose solution depends on the USSR Ministry of Tractor and Agricultural Machine Building and the Ministry of Ferrous Metallurgy. The in-house sewer systems have not been completed at the Volgograd enterprises under their jurisdiction.

The people's money that is invested in environmental protection should bear the maximum effect. It is spent with only one purpose, to preserve the national wealth for the good of the people.

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FERTILIZER, HERBICIDE POLLUTION OF BELORUSSIAN LAKES CONTINUES

Minsk SOVETSKAYA BELORUSSIYA in Russian 12 Dec 80 p 2

[Article by I. Yermolenko, public inspector of the Belorussian SSR State Committee on Environmental Protection: "For Cleanliness of Reservoirs"]

[Text] The ninth section of the CPSU Central Committee draft for the 26th Party Congress "Main Directions of Economic and Social Development of the USSR for 1981-1985 and for the Period to 1990" covers environmental protection questions. It focuses particular attention on intensifying the protection of water sources from depletion. I believe that something should be said here about the need for waging a decisive battle against pollution of lakes and rivers. Polluted water sources and reservoirs, as is known, are becoming unsuitable for fish, amphibians, and mollusks.

The following examples indicate how great is the threat of reservoir pollution in our time. On 22 October of this year, the newspaper PRAVDA published the article "Naroch' Waits for Concern." It quotes the words of Academician of the Belorussian SSR Academy of Sciences G. V. Bogomolov: "I have been observing the Naroch' for many years, and I can testify with bitterness that the lake is degenerating. Many chemical and organic fertilizers and herbicides flow from the surrounding fields into it. The chemical composition of the water is changing. Land-reclamation work in the lake zone is disrupting its water balance. Each year the shallow coastal zone has a more extensive and denser population of reeds and algae." "

All of this has had a negative effect on the ichthyofauna of the lake. Certain fish species have already become rare and smaller. Whereas in 1961 1.520 centners of fish were caught in Lake Naroch', in 1979 only 437 centners were caught. This fate (in a number of cases with even more serious consequences) threatens many republic reservoirs.

If there were some kind of restriction on the discharge of untreated water into the reservoirs from the industrial enterprises of cities that have treatment works monitored by state and departmental control, then nothing like this would exist in the production activity of agriculture. The run-offs of dissolved chemical fertilizers, herbicides and organic fertilizers are so great that they turn small rivers into effluent canals, and do great damage in the medium rivers to the ichthyofauna that sometimes reaches tens of thousands of rubles. All of this occurs as a result of the grossest violations of the standards and instructions for storage and use of mineral and organic fertilizers and herbicides. Here are several examples.

On 21 March while ammonia water was being taken in from the stationary tanks installed on the shore of the Drut' River (kolkhoz "Pravda" of the Tolochinskiy rayon), the rusted-through sectional spigot broke resulting in a rapid discharge of 20 tons of ammonia water. This water poisoned the fish in the Drut' River for 18 kilometers. The initial damage, not considering the further consequences, was defined as R 27,000. This would not have happened if the tanks had not been located on the river bank, but beyond the boundary of the floodwaters of this region as stipulated by the appropriate instructions.

On 21 July 1980, in the sovkhoz "Koptevskiy" of the Goretskiy Rayon, the dam was broken and about 60 tons of liquid manure poured into the Remestyanka River. Every living thing for 10 kilometers in the river died. The Gosrybfond [State Fishing Fund] estimated the initial damage as 7,000 rubles. It would seem that the break in the dam would be fixed quickly. Nothing like that happened. It was only begun after 3 months. During this whole time the liquid manure continued to pour into the Remestyanka River and further into the Pronya and Sozh Rivers.

Similar discharges of liquid manure were permitted last summer into the Ptich' River by the sovkhoz "Kavgarskiy" of the Osipovichskiy Rayon, and into the Mireya River by the pedigreed stock farm "Lenino" of the Goretskiy Rayon. The Belrybvod inspection established that the ichthyofauna in the Mireya River had completely died from the previous discharges, and today this is no longer a river, but a dirty effluent canal entering the Dnieper.

We cited cases above of direct discharges of chemical and organic fertilizers into rivers, but the indirect discharges of fertilizers and herbicides are no less destructive for reservoirs. This occurs when the fertilizers are hauled into the field before the beginning of agicultural work and are dumped on the ground on the edges of the sections. They are not enclosed or covered from atmospheric precipitation. This also is a violation of the standards for the use of fertilizers and herbicides. Uncovered fertilizers and toxic chemicals become accessible to wild animals, frequently resulting in their death. Under the influence of atmospheric precipitation, the fertilizers and herbicides become concentrated solutions. They enter the nearest reservoirs in this form.

In all cases where natural objects begin to be damaged in significant dimensions, the enterprises, sovkhozes and kolkhozes are sued and the question of punishing the guilty is raised. Unfortunately, the higher economic agencies, local Soviets of People's Deputies, and even the courts do not always make a basic evaluation of these negative facts. As yet, for example, the leaders of the sovkhozes "Koptevskiy" and the pedigree stock farm "Lenino" of the Goretskiy Rayon, and the kolkhoz "Pravda" of the Tolochinskiy Rayon who were responsible for considerable damage to nature have not been punished.

In speaking of reservoir protection, it is impossible to ignore the following fact. Poachings involving the same ammonia water, as well as ammonium nitrates and acetylene welding equipment have recently acquired a mass nature. On the night of 16 to 17 October the Mogilev oblast inspection of Belrybvod caught 12 poachers on the Sozh River. Four acetylene apparatus and eight spears were confiscated. Among those caught were the gas welder of the Cherikov association of the Belorussian SSR State Committee of Agricultural Equipment N. M. Kaverin, the driver of the local sovkhoz "Znamya" Ye. M. Kaverin and others.

These forbidden tools and methods are used to catch fish on the Sozh River within the limits of the Krichevskiy, Cherikovskiy and Slavgorodskiy rayons.

Protection of the reservoirs, as of all nature, is an important state problem. In my opinion, therefore, to all that has been said in the draft of the CPSU Central Committee for the 26th Party Congress one should add a point regarding the formulation of a new document that clearly regulates the transporting, unloading, storage and use in agriculture of mineral and organic fertilizers, herbicides and toxic chemicals in order to prevent their damage to the animal world and the animal habitat. One should also speak of an increase in the administrative and criminal responsibility of officials, groups and individual citizens for damage to objects of nature.

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AREAS HIT BY FLOODS

Nicosia THE CYPRUS WEEKLY in English 30 Jan-5 Feb 81 p 1

[Text]

A severe rainstorm hit southern Cyprus yesterday, flooding streets and many buildings in Limassol and Larnaca and causing thousands of pounds worth of damage to factories and plantations.

Extra fire engines were rushed from Nicosia to help the local firemen cope with the situation. Water had to be pumped from many homes while stranded motorists were rescued by the fire brigade.

A clothing factory and a paper plant in Limassol were inundated and products worth thousands of pounds were damaged or carried away by the flood waters.

DAMAGE

A severe hail storm caused extensive damage to the large citrus plantations at Phassouri and Ypsonas west of Limassol. Shortly after 1 p.m., the entire area was blanketed with hail. Damage was also caused to vineyards and other crops.

Heavy rain affected most of the island during the day, while snow continued to pile up on Troodos. Cyprus was getting a taste of the nasty wintry weather ravaging Greece and other countries in the eastern Mediterranean.

WETTEST

It has been one of the wettest Januaries for years, after a slow start to this winter's rainy season.

A Meteorological Service spokesman told the Cyprus Weekly that during the period October-December, the amount of rainfall over the island was only about 48% of normal.

"But continuous rain in January changed the picture completely", he said.

All areas had much higher amounts of rain than normal. Limassol and Paphos districts as well as the Troodos range had especially high amounts of rain or snow.

DEFICIENCIES

"In some locations, rainfall was so high that it made up for the deficiencies of the previous three months", the spokesman said.

Rainfall measurements —until yesterday morning, before the latest downpour —showed that Limassol had 223 millimetres of rain in January, compared with a normal of 112 mm.

Paphos had 188 mm (101 mm normal for January) while Nicosia had 76 (68 normal).

Some of the heaviest rain this month fell on the Troodos hills. Makheras had 248 mm, double the normal, while Platania measured 464 mm of rain, again about double the normal figure.

Unusually heavy snow has also provided some of the best skiing conditions for many years, with the depth of snow nearing the 3 metre mark on Mt Olympus.

The spokesman said: "For the central plain, the cumulative rainfall over the last four months is still a little below normal. But if we take the island as a whole we can say that rainfall this winter, after the heavy rains of January, is about normal."

It has been a mixed blessing for farmers. They have certainly welcomed the rain, even though it is coming a bit late, but some of them have suffered serious damage because of the downpours. Reports from the area of Frenaros and Xylotymbou say potato plantations and early vegetables were ravaged by hail earlier in the week.

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ANKARA COULD BE UNINHABITABLE IN 15 YEARS BECAUSE OF POLLUTION

Paris LE MONDE DIMANCHE in French 28 Dec 80 p VII

[Article by Artun Unsal]

[Text] The sky of Ankara is poisoned by fumes of lignite which cannot rise above the basin where the city is built. Ankara is the world's most polluted city in the winter. Experts say that in 1 day alone an average of 235 tons of sulfur and 150 tons of smoke are pumped into the atmosphere. Other specialists say that if those fall-outs were transported, it would take a convoy of 45 trucks each weighing 5 tons.

For more than 20 years, alarming speeches have been heard, but in vain. Positioned in several points of the Turkish capital, tracking stations indicate an average of 254 to 333 micrograms of smoke per cubic meter of air, when the permissible tolerance is of 75 grams. Likely, records show 534 micrograms of sulfur dioxide per cubic meter of air, while the normally breathable quantity is 150 micrograms.

Because of galloping inflation and permanent climate of inseucrity, the inhabitants of Ankara who are getting more and more worried, have yet another reason to despair. Experts keep repeating that in 15 years Ankara would be uninhabitable, recalling the disastrous fog of London where in 1952 some 5,000 people died.

During winter the air in Ankara has harmful effects equivalent to ten packs of cigarettes a day, especially owing to the large quantity of benzoprene.

Yet, Anakara, whose atmospeheric conditions are during the winter months comparable to those, formerly, of Pittsburg, is essentially an administrative and commercial city, where industrial companies are almost inexistant. But from some 90,000 chimneys burst out, each winter morning, grey and yellow smoke charged with sulfur dioxide ash. It is the favorite subject of conversations, especially in December when, each year, an antipollution week is rigorously celebrated amidst a great number of official promises. Situated at an altitude of 850 meters, Ankara is surrounded by three hills which block out the wind. A city located more or less in a basin, the Turkish capital is the victim of pollution mostly on windless days. An increase in respiratory disorders and an aggravation of bronchial ailments is noticed. Flu has become quasichronical. Doctors observe among other things a sharp increase in the number of patients suffering from asthma, not to mention the increase in lung cancer.

What to do? A legislative bill against pollution has been shuffled around in the offices of Ministry of Health since 1967. There are also private suggestions to

"save" life. Local authorities are also making efforts to expand green areas. A factory has been built to ameliorate the quality of lignite used in boilers, but it is not yet in operation.

According to experts, Turkish lignite contains 88 particules of sulfur per 1,000, while in France, for example, it is officially forbidden to use lignite that contains more than 20 per 1,000. Diplomats stationed in Ankara are given extra winter vacations, but the Turks, forced to remain in the capital, have no other choice but keep their windows tightly shut.

Five years ago, experts estimated it would cost at least 2 billion Turkish pounds (the dollar which is now worth 70 pounds, was then worth 15) to clean the atmosphere. To help the people of Ankara, the World Bank accorded a 6 million dollar loan to support a project for the production of smokeless combustible fuel. But observers say that the best solution would be to rebuild Ankara outside of the natural basin.

Another suggestion, remark some ironical people, would be to outlaw combustible fuels in Ankara. This was almost realized last winter. Because of the serious shortage of coal and fuel-oil, Ankara had in fact known the least polluted winter in 20 years.

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